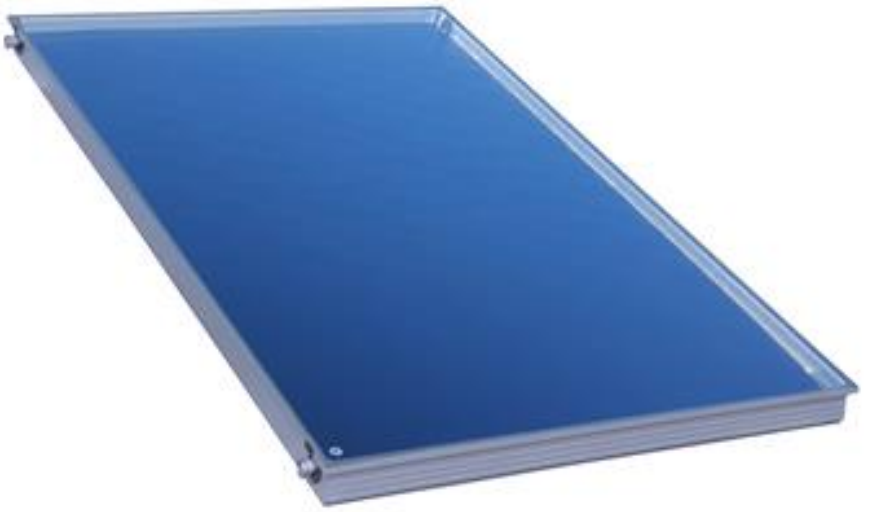
Dimplex
SOLAR



SOL202FSP – SOL808FSP

Freestanding installation manual

0 Contents

0 CONTENTS 2

1 BEFORE YOU START 3

1.1 General 3
1.2 Competence 3
1.3 Health and Safety 4
1.4 Risk assessment 5
1.5 Tools required 5
1.6 Structural requirements 5
1.7 Earthing and lightning protection 6
1.8 Connections 6
1.9 Pipe Work 7
1.10 Guarantee 7

2 SCOPE OF DELIVERY 8

3 PRODUCT FEATURES AND DESCRIPTIONS 10

4 RECOMMENDATIONS FOR ATTACHMENT POINTS 13

5 COLLECTOR CONNECTIONS 15

5.1 Single collector portrait connection 15
5.2 Multiple collector portrait connection 16

6 INSTALLATION 17

7 OPERATION 27

7.1 Flushing and filling 27
7.2 Installing the temperature sensor 27
7.3 Operating pressure 27
7.4 Bleeding 27
7.5 Check heat transfer fluid 28

8 MAINTENANCE 28

9 DECOMMISSIONING 28

1 Before you start

1.1 General

Thank you for choosing a Dimplex product. We ensure you that every effort has been made at the design, manufacture and delivery stages to produce a product of superior quality. We will provide you with the best possible support throughout the product's lifespan.

As part of on-going product development and improvement Dimplex reserves the right to undertake changes to the product without prior notice. Great care has been taken to ensure this manual was correct at the time of print. Should you however discover any issues with the information contained therein please do not hesitate to contact your vendor.

We strongly recommend reading the whole contents of this manual before commencing the work.

1.2 Competence

Dimplex products have been designed and manufactured to the current relevant standards and under stringent quality control procedures. It is therefore imperative that the product is only installed by a:

- trained and
- competent person as defined in the relevant regulations. Dimplex does not accept any liability for damage done to persons or property resulting from undue handling and usage of this product.

The instructions provided here are directed at qualified professionals only. The supplied materials must be used for the installation. Prior to installing and operating the solar panel system, familiarise yourself with the standards and regulations valid at the site in question. We recommend that you use a carrying strap to transport the solar collector. You must not lift the solar collector by its connections or screw threads. Do not jolt the collector or allow parts of it to be affected by mechanical factors. This is particularly important for the glass, rear panel, and pipe connections.

All regulations current at the time of installation are to be considered alongside the content of this manual as they form the code of best practice.

The warranty of this product is linked to the ability to prove that the product was installed, commissioned and maintained:

- by a competent person.
- in accordance with Dimplex instructions and the current relevant regulations and legislation.
- the product being registered with Dimplex at the time of installation using the form in the Dimplex On Site Guide.
- records showing the date of maintenance in accordance with the maintenance schedule as detailed in the On Site Guide.

1.3 Health and Safety

The installation of this product is subject to the Health and Safety at Work Act. It is your responsibility to ensure that the transport, storage, installation and operation of the products are carried out in a safe manner. Please refer to Table 1 for general safety information.

Dimplex will not accept any liability due to damage caused to people or property resulting from negligence or not adhering to the relevant Health and Safety practices.

	Safety precautions: Before commencing mounting work on roofs, it must be ensured in all cases that the non-personal fall protection and fall-arrest systems required by DIN 18338 (Roof Covering and Roof Sealing Works) and DIN 18451 (Scaffolding Works) are in place. See also Builders' Protection Ordinance, Federal Law Gazette 340/ 1994, paragraphs 7-10! Other country-specific regulations must be observed!		Safety harnesses should be fixed above the users whenever possible. Safety harnesses should only be fastened to sufficiently load-bearing structures or fixing points!
	If non-personal fall protection or fall-arrest systems cannot be installed for technical reasons, all personnel must be secured by means of suitable safety harnesses!		Never use damaged ladders (e.g., wooden ladders with split runners or rungs, or bent or buckled metal ladders). Never try to repair broken runners, rungs or steps on wooden ladders!
	Only use safety harnesses (safety belts, lanyards and straps, shock absorbers, fall arresters) that were tested and certified by authorized testing bodies.		Ensure that ladders are put up safely. Observe the correct leaning angle (68° - 75°). Prevent ladders from sliding, falling over or sinking into the ground (e.g. using wider feet, feet suited to the ground or hooking devices).
	If non-personal fall protection or fall-arrest systems are not provided, working without the use of suitable safety harnesses may lead to falls from heights and therefore cause serious or lethal injuries!		Only lean ladders against secure points. Secure ladders in traffic areas by suitable cordoning.
	Ladders not properly secured against sinking in, sliding or falling over may lead to dangerous falls!		Contact with live electric overhead cables can be lethal.
	Whenever you are near live overhead electric cables where contact is possible, only work if: - it is ensured that they are voltage-free and this is secured for the duration of work. - the live parts are secured by covering them or cordoning them off. - the prescribed safety distances are maintained. Voltage radius: 1 m .....voltages up to 1000V 2 m .....voltages from 1000V to 11000V 3 m .....voltages from 11000V to 22000V 4 m .....voltages from 22000V to 38000V > 5 m in case of unknown voltages		Wear protective goggles when drilling and handling collectors!
			Wear safety shoes when carrying out installation work!
			Wear cut-proof safety gloves when mounting collectors!
	The manufacturer hereby guarantees to take back products identified with an eco-label and to recycle the materials used. Only the heat transfer medium specified may be used!		Wear a helmet when carrying out installation work!

Table 1: Safety information

1.4 Risk assessment

The compilation of a risk assessment is strongly recommended before installing the product. The following areas require particular consideration in addition to the information required by the Health and Safety at Work Act.

- scalding: where appropriate or required by law a thermostatic mixing valve is to be fitted to the hot water outlet of the cylinder.

- explosion: the unit is fully equipped with all relevant safety equipment to comply with current regulations. The correct design and function has been verified by independent third party testing. The correct application thereof is the responsibility of the competent installer.

- water borne organisms (i.e. Legionella): if applicable a risk assessment should be carried out following the recommendations outlined in the Approved Code of Practice L8.

- the user preference must be considered when commissioning the system, in particular when adjusting the solar and auxiliary system temperature and timer settings.

1.5 Tools required

It is recommended that the below list of tools be used when installing the Dimplex solar collector.

- Two people required to complete this installation
- Cordless drill with 14mm stone drill
- Measuring tape, plumb line and pencil
- Hammer
- Hacksaw
- Ratchet
- Spanners, 13/19/30/32 mm

1.6 Structural requirements

The system may only be installed on a roof surface or substructure with a sufficient load-bearing capacity. The static load-bearing capacity of the roof or substructure must be checked in accordance with local and regional stipulations at the site prior to the installation of the panels, if necessary by means of the commissioning of a structural engineer.

In particular, it is important to check whether the quality of the (wooden) substructure is sufficient to enable the durability of the screw connections for attaching the panel mounting apparatus. The onsite checking of the system (collectors and attachment apparatus) as per EN 1991 and/or country specific legislation is particularly important in areas prone to heavy snow or high winds. All features of the installation site (foehn wind, venturi effect, vortex formation etc.) that might result in higher stresses at the site in question must be investigated.

Information regarding flat roofs: The installation of a collector field is carried out on a (pre-existing) roof. Attics with a special construction or that are used for residential purposes and roof pitches that are below the minimum recommended value require (in relation to the cladding) additional measures to be carried out by the installer in order to protect against the penetration of water as a result of wind force and driving snow. This might include sub-roof membranes, for example.

When selecting the installation site, note that the maximum permitted loads must not be exceeded as a result of snow or wind forces. To prevent inadmissible wind loads, the panels must not be installed at the edge of a roof (e/10 zones as per EN 1991, but minimum gap of 1 m). Panels must not be installed below a height transition so that it is not possible for excess loads to fall onto the panel system from the higher level as a result of drifting or sliding snow. If, to solve this problem, snow catchers are installed on the higher level, the statics of the higher level must also be checked. In the case of larger collector fields, we recommend that you mount the panels on a separate bearing structure made from steel profiles. Attachment using concrete ballast blocks enables the system to be installed without penetrating the roof cladding. If the panels are mounted on concrete ballast blocks, rubber underlays must be used to increase the static friction between the concrete ballast blocks, thus preventing damage to the roof cladding.

1.7 Earthing and lightning protection

If a lightning arrester is available, the collector frame should be connected to it. This may be performed using the collector frame, because the slot for mounting on the reverse side of the collector is ideally suited for fixing a thick cable. If no arrester is available, the potential equalization is carried out using a connection of a cable at the pipe(s) which are led in the building. Please consult local regulations to ensure adherence.

As per the stipulations of Lightning Protection Standard EN 62305 Parts 1 to 4, the collector field must not be connected to the building's lightning protection. Beyond the scope of validity of this standard, country-specific legislation must be observed. A safety gap of at least 1 m from any adjacent object that may be conductive must be kept. In the case of installations on top of existing metal substructures, an authorised and qualified electrician must be consulted. To enable potential equalisation of the building, the metallic conductor pipes of the solar circuit and all of the collector housing/fixtures must be connected to the main equipotential busbar in accordance with EN 60364 and/or country-specific legislation by an authorised and qualified electrician.

1.8 Connections

Connect the collectors using the compression fittings. If no flexible tubes are available for use as connection elements, make sure that the connecting pipework allows for precautions to compensate for the thermal expansion caused by temperature fluctuations, e.g.: Expansion bends and flexible piping (see the information on collector circuitry/operating recommendations). In the case of larger collector fields, the intermediate placement of expansion bends/flexible piping is required (CAUTION: Check the pump design). When the connections are tightened up, spanners or another wrench must be used as a counter wrench in order to prevent the absorber from being damaged.

The collector is suitable for an inclination of between 15º and 75º. The collector connections and venting openings must be protected so that water and contamination such as dust cannot enter.

1.9 Pipe Work

The pipe work from the collector to the pump unit and from the pump unit to the cylinder is to be all metal. The joints have to be high temperature resistant (compression, high temperature flat seal or high temperature press fitting). For more information please see Technical Manual.

1.10 Guarantee

Guarantee claims are only valid if the system has been used in conjunction with the supplier's original frost protection agents and if the system has been properly installed, commissioned, and maintained. The system must have been installed by a qualified professional and the installation instructions must have been followed without exception in order for any claim to be valid. This product must also be registered with Dimplex in accordance with Section 1.2 of this manual.

2 Scope of delivery

Please check the contents and the condition of your delivery, before signing the delivery documentation against the content shown in Table 2 and mark as appropriate. Contact your supplier immediately for any missing or damaged parts. Claims for missing or damaged parts after signing for the delivery documentation will not be accepted.

No.	Designation			SOL202	SOL404	SOL606	SOL808
				FSP			
A	**Solar flat plate collector 2.02m²**			1	2	3	4
B	**Hydraulic connection set**			1	1	1	1
	P01	22mm x 90° elbows	x2				
	P02	22mm stop ends	x2				
C	**Hydraulic interconnection set**			0	1	2	3
	P03	22mm x 22mm straight compression	x2				
D	**Rail portrait set**			1	2	3	4
	P04	Support rails for 1 panel	x2				
E	**Rail landscape set**			0	0	0	0
	P05	Support rails for 1 panel	x2				
F	**Rail interconnection set**			0	1	2	3
	P06	Clamping piece extension	x2				
	P07	Washer M8	x4				
	P08	Hex nut M8	x4				
G	**Side clamp set**			1	1	1	1
	P09	Side clamps	x2				
	P07	Washer M8	x2				
	P08	Hex nut M8	x2				
	P10	Hammer head bolt M8 x 25	x2				
H	**Centre clamp set**			0	1	2	3
	P11	Centre clamps	x1				
	P12	Centre clamp clamping piece	x1				
	P07	Washer M8	x1				
	P08	Hex nut M8	x1				
	P13	Installation gauge	x1				
I	**Roof hook fixing set**			0	0	0	0
J	**Coach bolt fixing set**			0	0	0	0
K	**Free standing fixing set**			2	3	4	5
	P26	Base bracket	x1				
	P27	Support bracket	x1				
	P28	Attachment bracket	x2				
	P20	Coach bolt M12x300 with hexagon	x2				
	P21	Rubber seal	x2				
	P22	Washer M12	x6				
	P23	Hex nut M12	x6				
	P10	Hammer head bolt M8 x 25	x2				
	P29	Hex bolt M8 x 30	x3				
	P07	Washer M8	x3				
	P08	Hex nut M8	x3				
	P18	Hex nut M8 (self-securing)	x2				
	P30	Installation manual	x1				

Table 2: Contents for freestanding installation

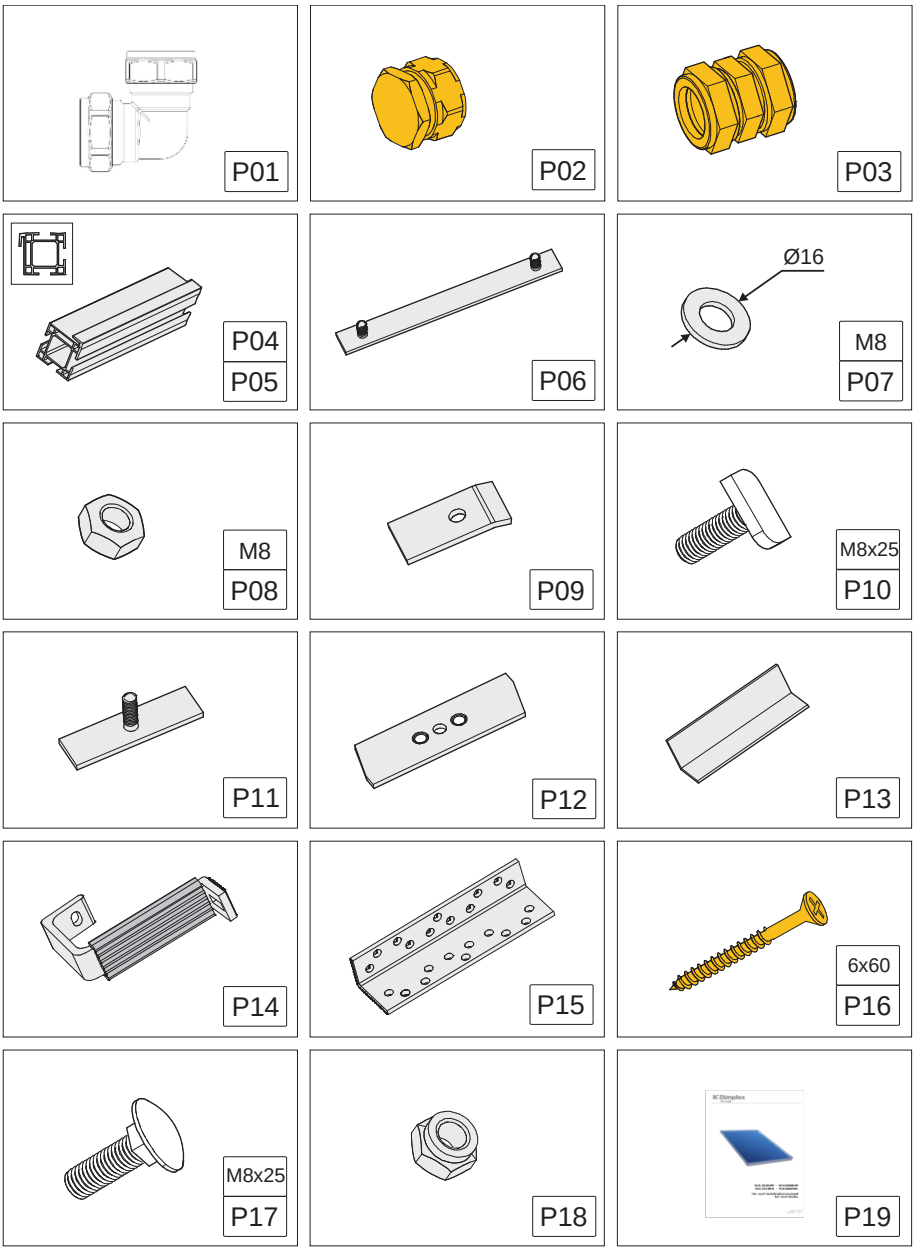


Figure 1: Overview of materials part 1

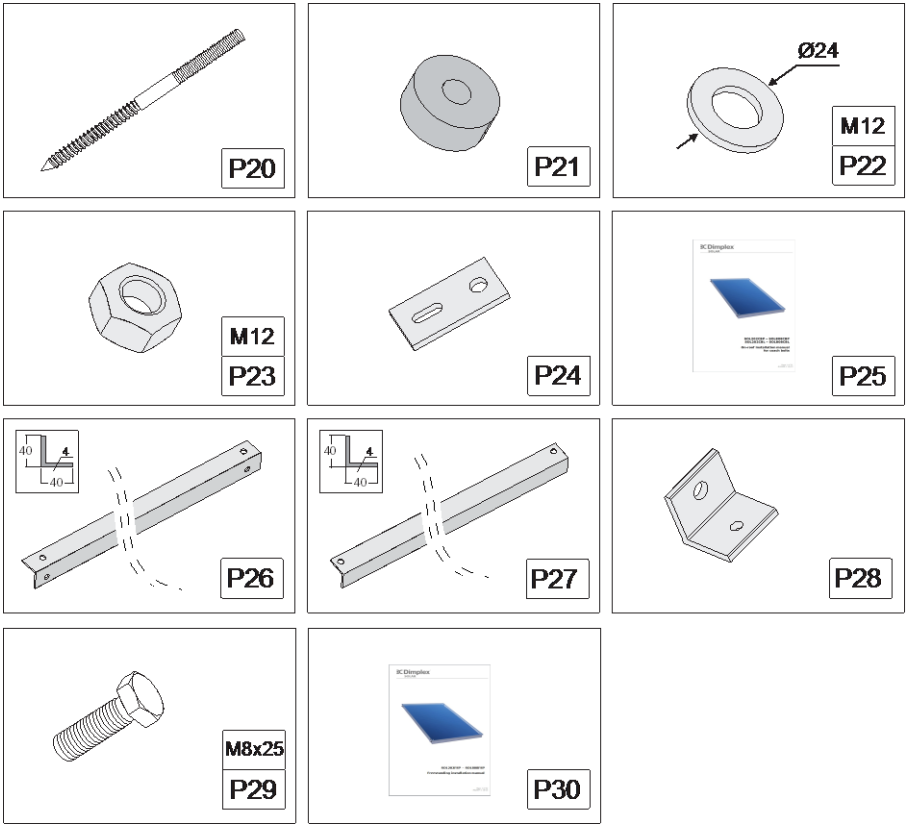


Figure 2: Overview of materials part 2

3 Product features and descriptions

The Dimplex Solar Free standing kit offers a simple and secure method of securing the SOL202COL solar collectors. The collectors can be installed at angles from 45° to 60°, but the collectors must be mounted at an angle of more than 20°.

Due to the connections between the collectors up to 4 collectors can be directly mounted together in one row. Figure 3 illustrates the technical specifications of the collector Figure 4 shows the collector dimensions and Figure 5 shows the correct handling requirements of the collector.

Weight empty	33 kg
Dimensions	
- length	1730mm
- width	1170mm
- height	83mm
Heat transfer medium	SOLHT20
Max op. pres. [bar]	10
Tilt angle	
- min	20°
- max	75°

Collector array [m²]	2	4	6	8
Cu pipe [mm]	15	15	22	22
Wind / snow load [kN/m²]	1.9	1.9	1.9	1.9

Figure 3: Collector technical data

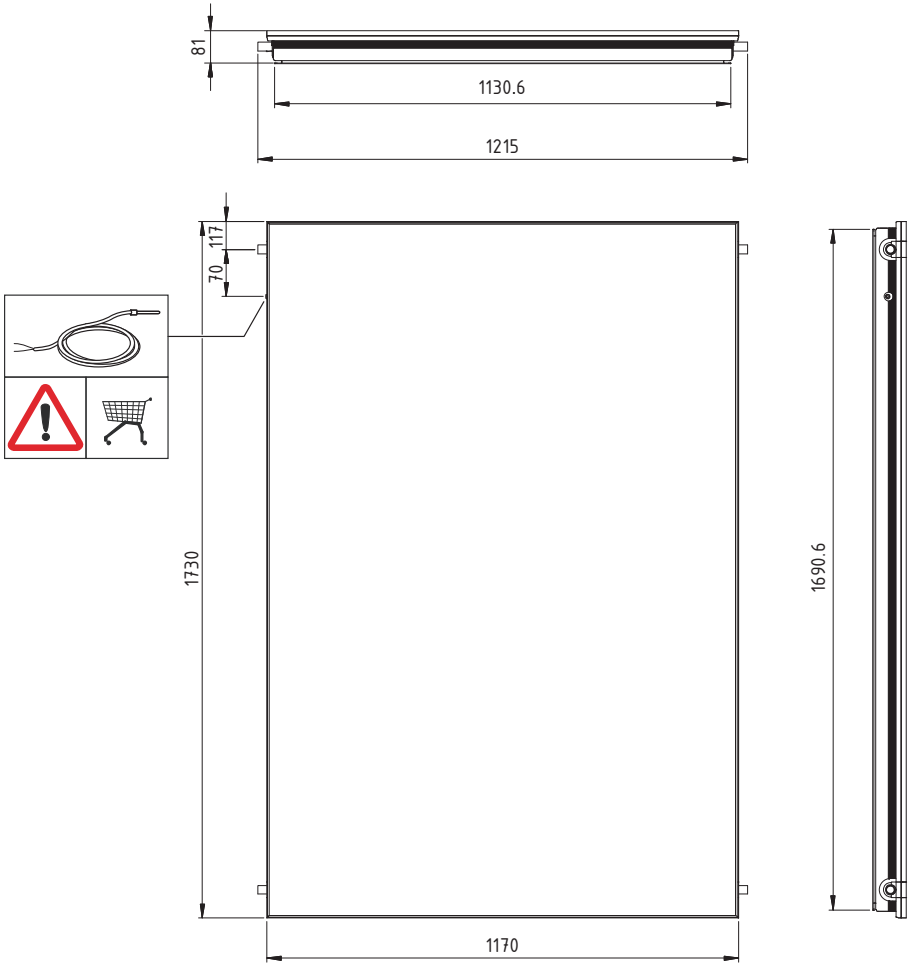
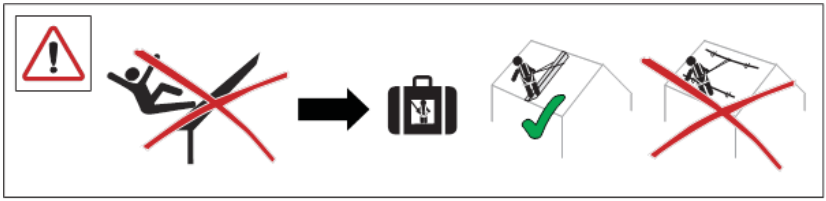


Figure 4: Collector dimensions



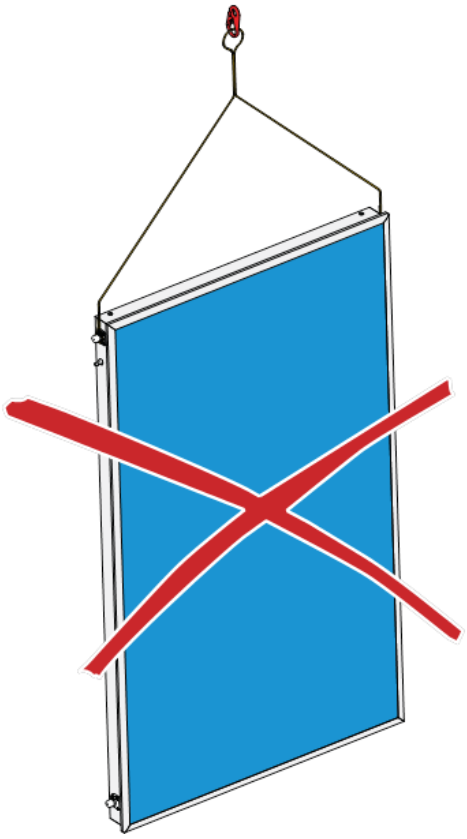


Figure 5: Handling requirements of the collector

4 Recommendations for attachment points

Structural data for concrete ballasts

The maximum permissible wind load for the collectors can be found in the mounting instructions. For ground-mounted installations, concrete ballasts are required to prevent the structure from sliding or tipping over. The minimum weight of the concrete ballasts in relation to the potential gust speed can be found in the following table. Each supporting plane requires one continuous piece of concrete ballast with a minimum length (Figure 6). Slip-resistant rubber matting must be placed between the concrete ballast and the installation surface. Due to the heavy weight of the concrete ballasts, an evaluation must be undertaken by a structural engineer to check the load-bearing capacity of the roof and its suitability to handle possible additional weight (e.g. snow).
The collector inclusive of roof mountings is suitable of withstanding a maximum gust of wind (V) of 129km/h and of a maximum characteristic snow load (S_k) of 1.9kN/m². The static requirements have been defined according to EN 1991.

Weight per concrete ballast in [kg]	
Gust velocity pressure q [kN/m²]	**Concrete ballast weight [kg]**
0.5 (max. permissible)	306
The number of supporting triangles in relation to the number of collectors is provided in table 4. The weight specifications of the concrete ballasts are based on a friction coefficient of 0.8 (concrete - rubber matting).	

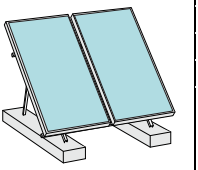


Table 3: Gust velocity vs. weight per concrete ballast in portrait installation

When mounting with concrete ballasts, the coach bolt must not protrude or overhang! Depending on the wind load zone, type of terrain and building height, the resulting wind gust pressure should be taken from the local wind norms (e.g. DIN 1055-4).

The supporting rails must always be installed in decreasing sequence starting with the base set SOL202RP / SOL202RL						
		Dimensioning [mm] / Figure 6				
Collectors	**Supporting planes**	**A**	**B**	**C**	**D**	**E**
1	2	1480	210	1220	800	2000
2	3		350	2460	880	
3	4		350	3670	990	
4	5		350	4900	1050	

Table 4: Dimensioning table for portrait installation

Important note regarding the structural design:

For elevated on-roof installations, a shape coefficient of μ1=1.0 applies for large halls with flat roofs of 250m² or larger for the roof construction (primary construction).

This serves to take into consideration the potential obstruction to snow blow-off from roofs compared to snow loads on the ground.

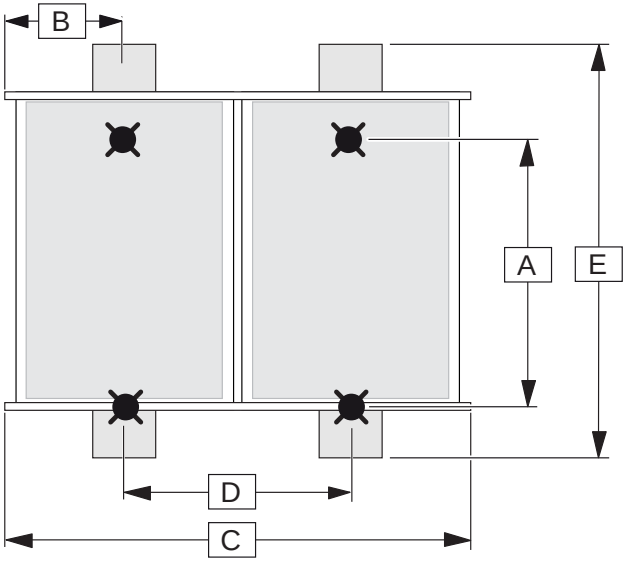


Figure 6: Overview of dimensions for portrait installation

5 Collector connections

Due to its four connections, the collector offers a wide choice of connection options. Ensure that no part of the collector array, or collector in the array, is short circuited by following these instructions.

When planning the collector array, the position of the various connection parts must be in accordance with the diagrams.

Table 5 illustrates the components required to make all the collector connections.

Part No	Image	Description
P01		22mm x 90° elbow
P02		22mm stop end
P03		22mm x 22mm straight compression

Table 5: Collector connection components

5.1 Single collector portrait connection

When installing a single collector installation, there is one connection option available. The sensor must always be installed at the top of the collector and on the connection where the heat transfer fluid leaves the collector.

Figure 7 illustrates the left hand side connection option that is applicable only to a single portrait collector connection.

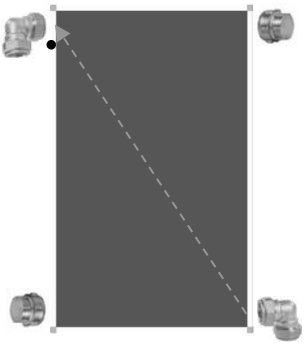


Figure 7: Left hand side connection option for single collector only

5.2 Multiple collector portrait connection

When installing multiple collectors, (2 up to 4), component P03 is used to connect one collector to the next.

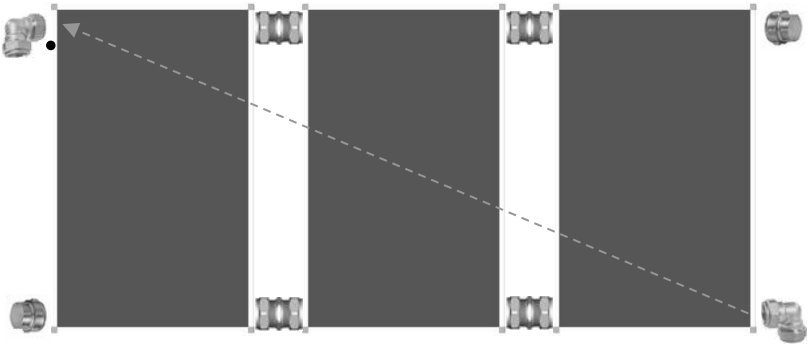


Figure 8: Multiple collector portrait connection

The sensor must always be installed at the top of the collector on the connection flow of the system.

6 Installation

Please ensure the following instructions are adhered to correctly when installing the collector and that all the laths under the area of the installation are in good condition. Replace any damaged, weak or broken laths and double nail or screw to the rafters.

Drill/pre-drill

Danger of scalding!

See page

Important note

Tighten firmly

Qualified electrician

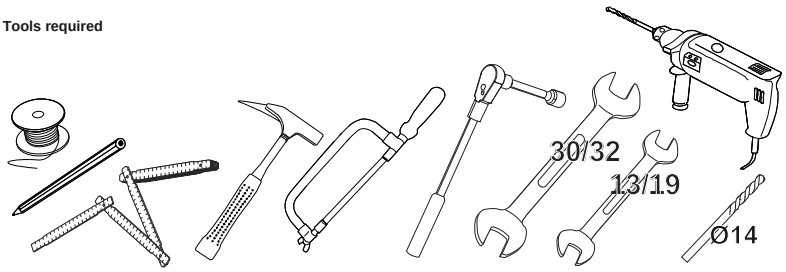
Hand-tight

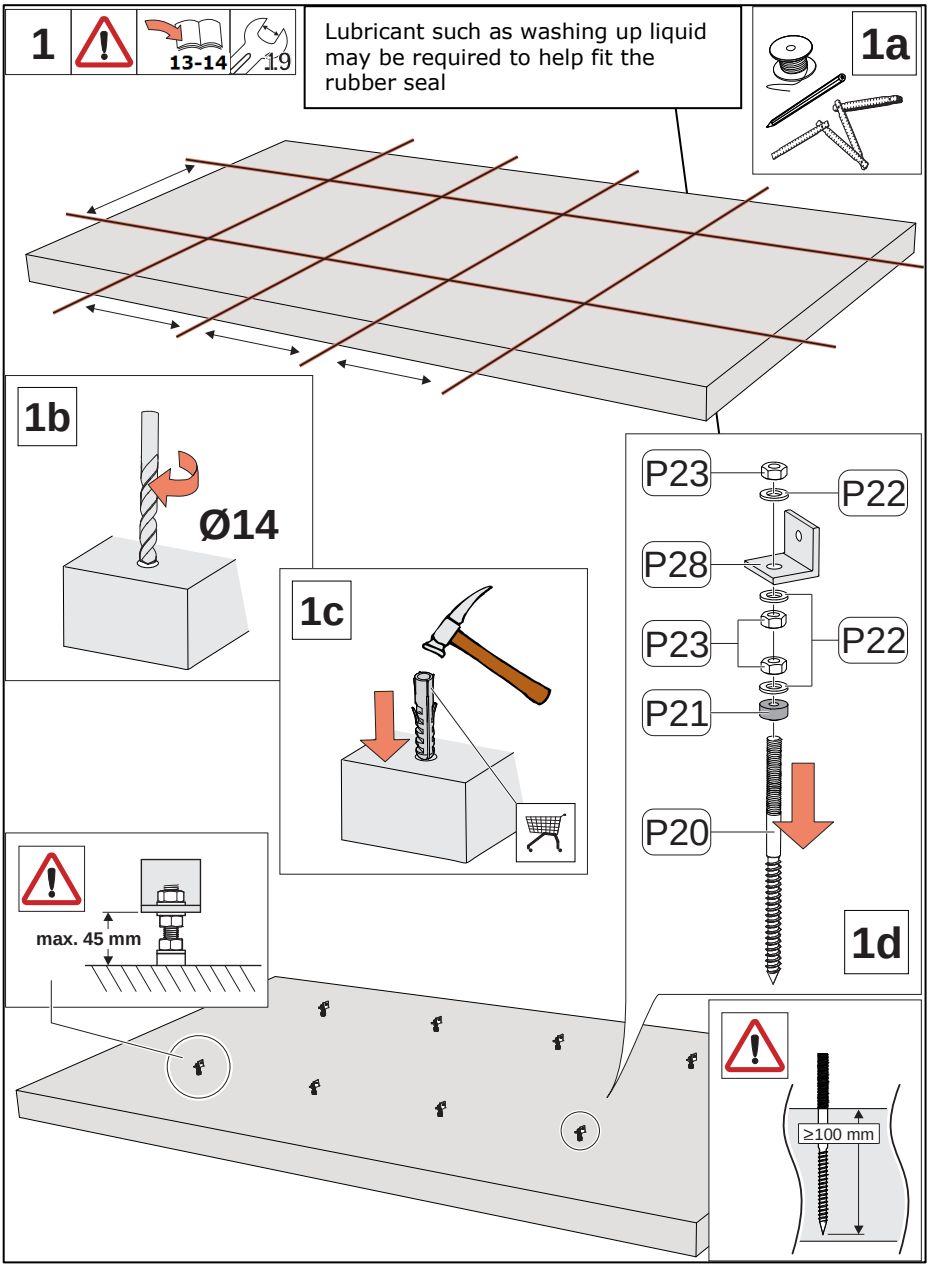
Parallel

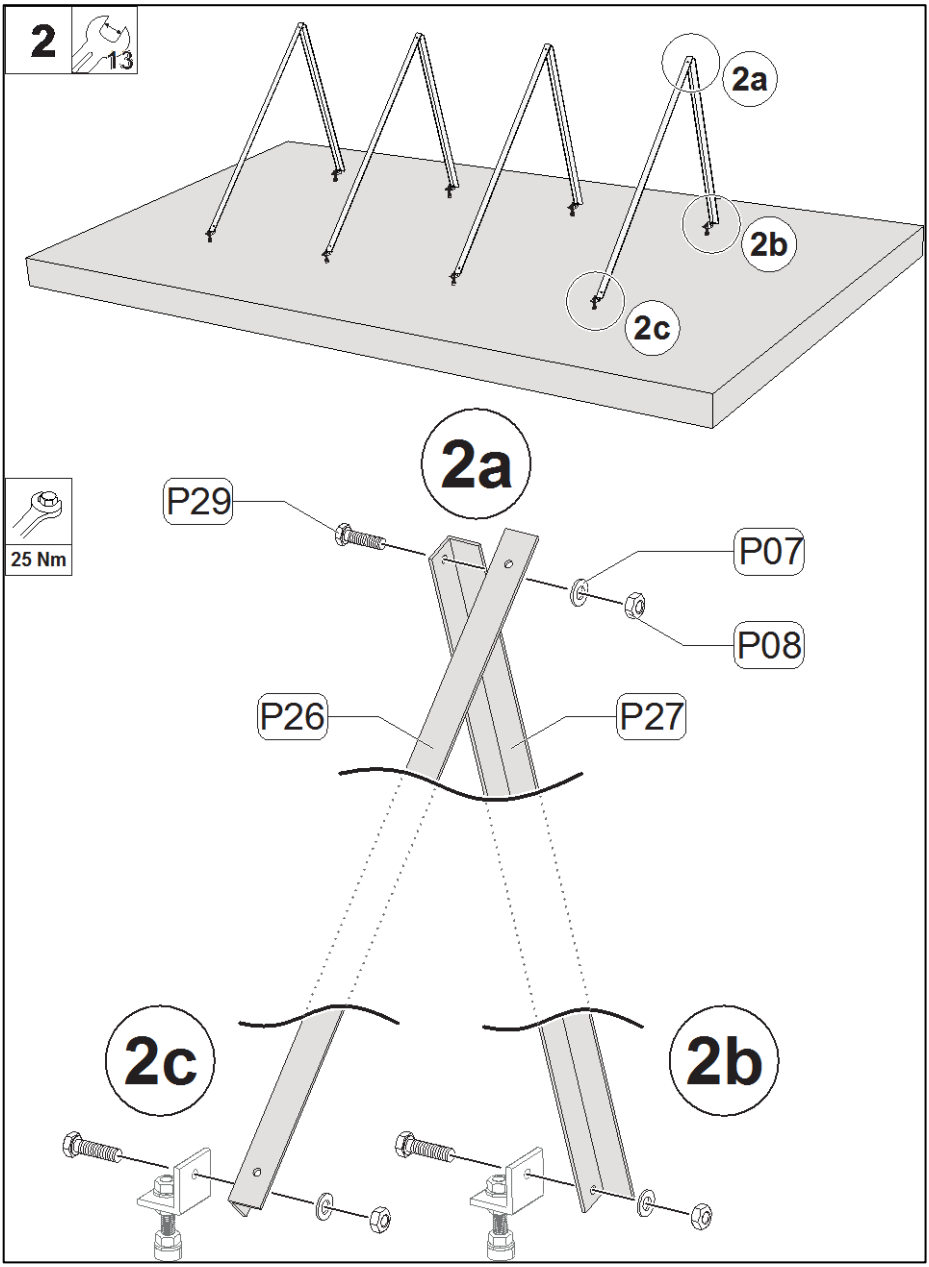
right angle

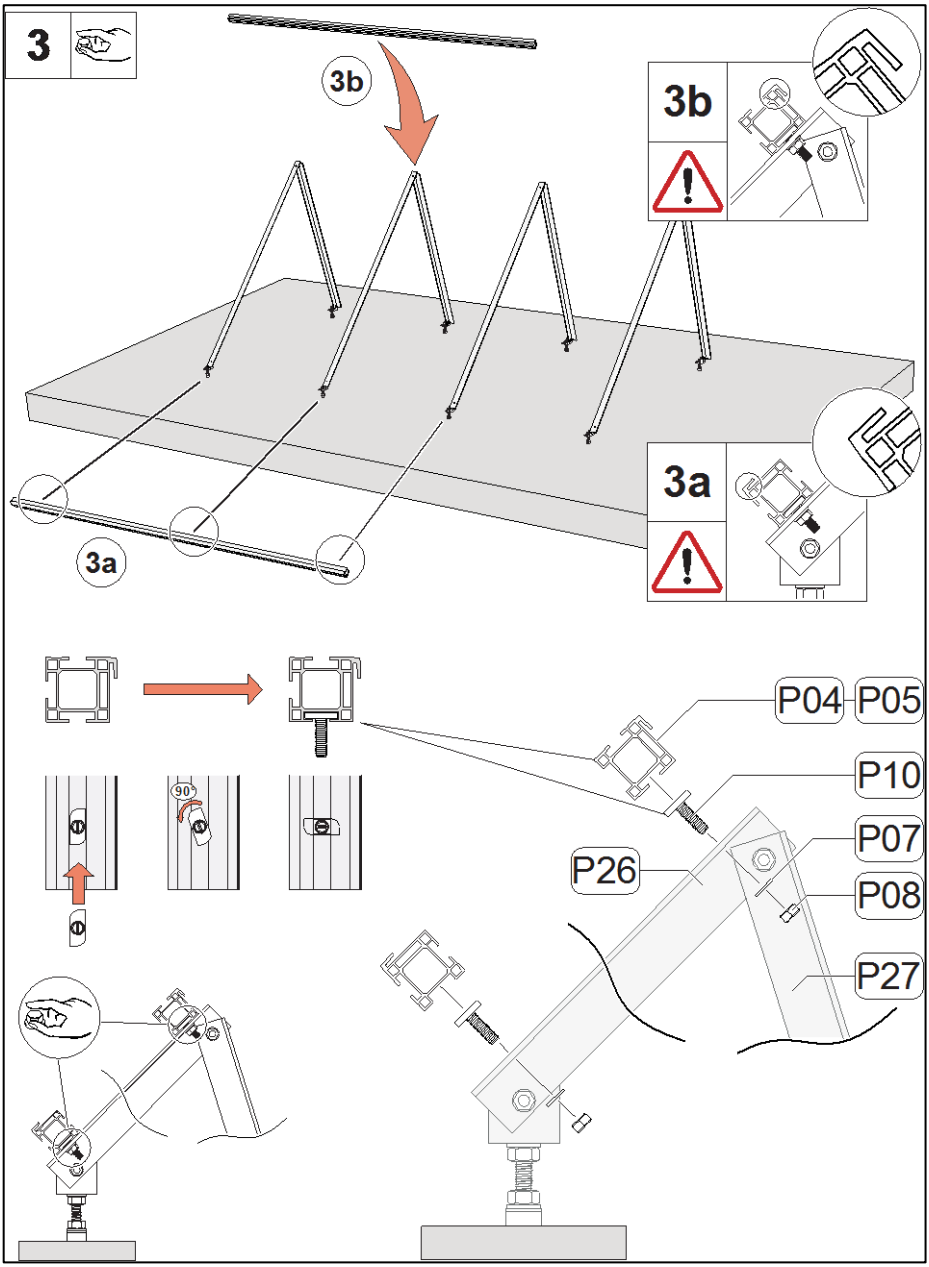
Materials to be provided by others

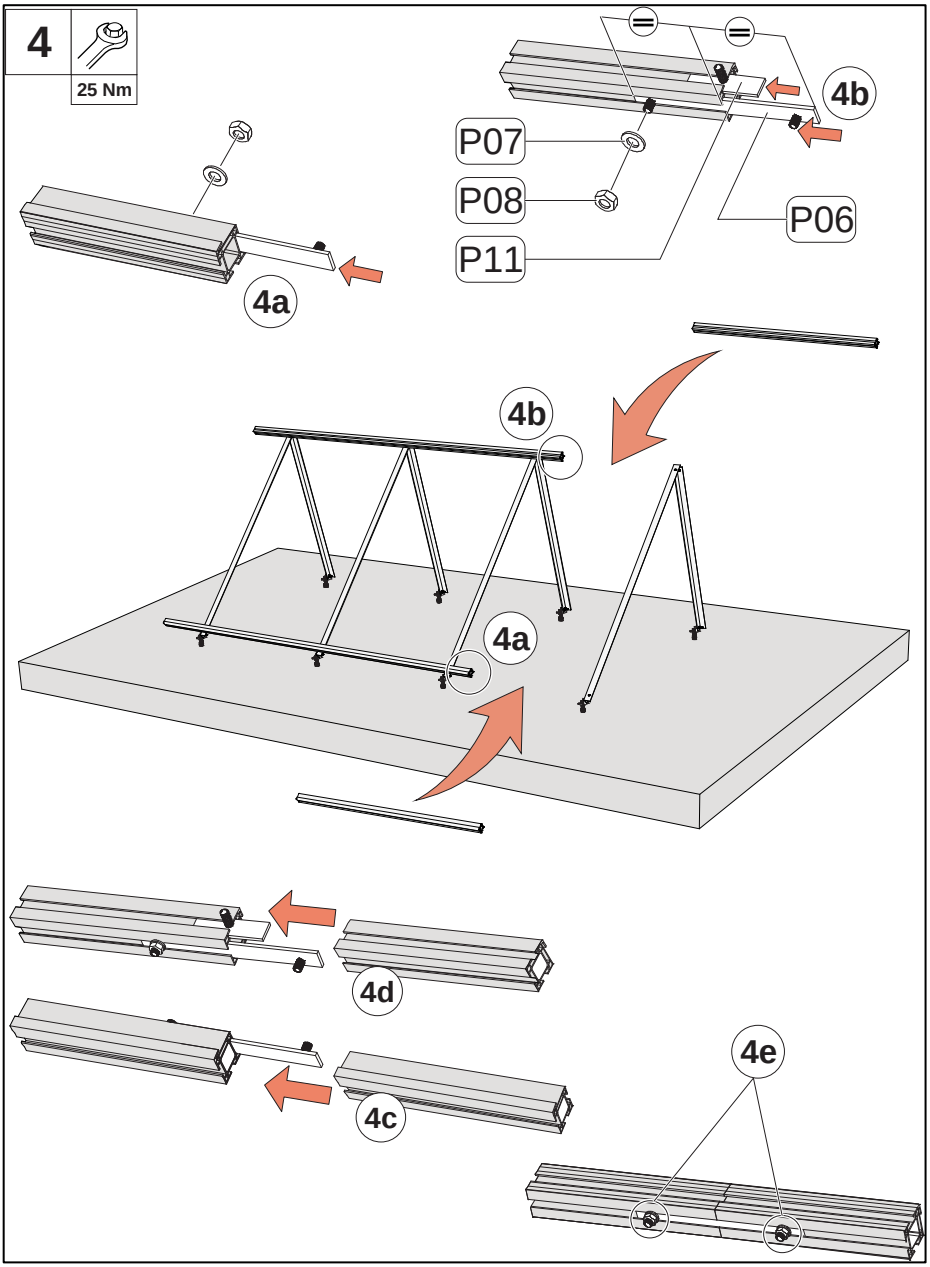
Tools required

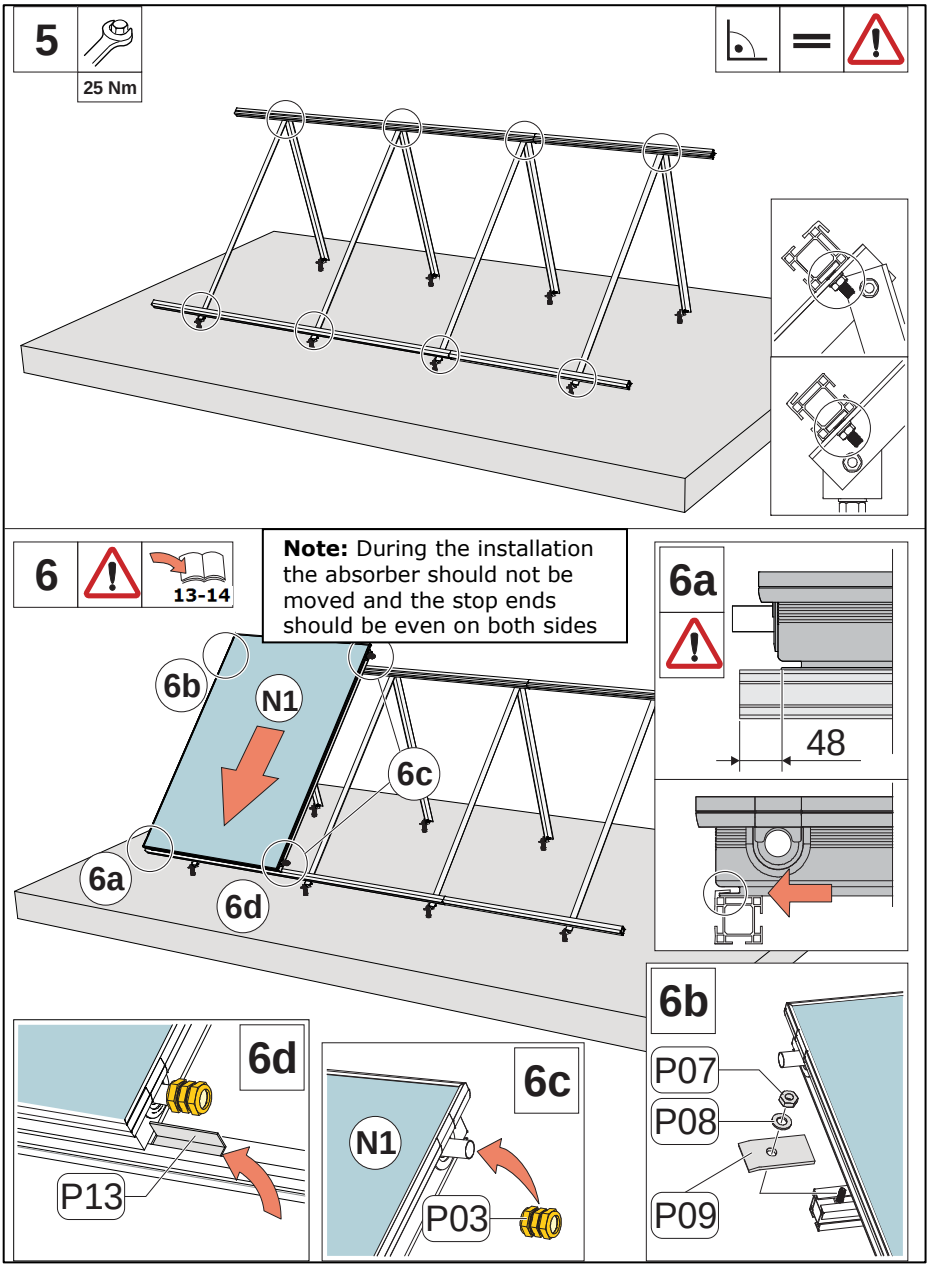


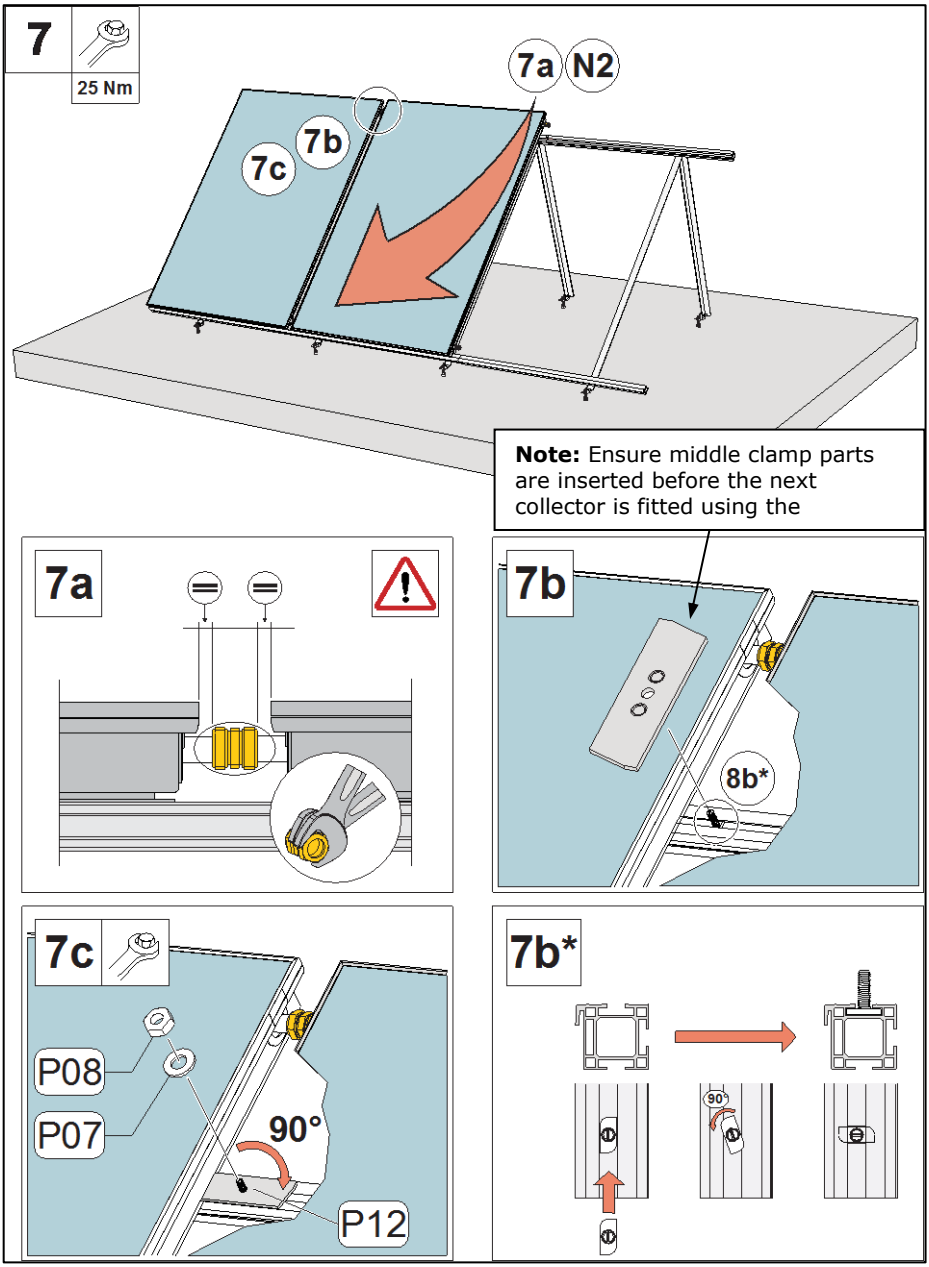

1
13-14
19
Lubricant such as washing up liquid may be required to help fit the rubber seal
1a
1b
Ø14
1c
P23
P22
P28
P23
P22
P21
P20
1d
max. 45 mm
≥100 mm

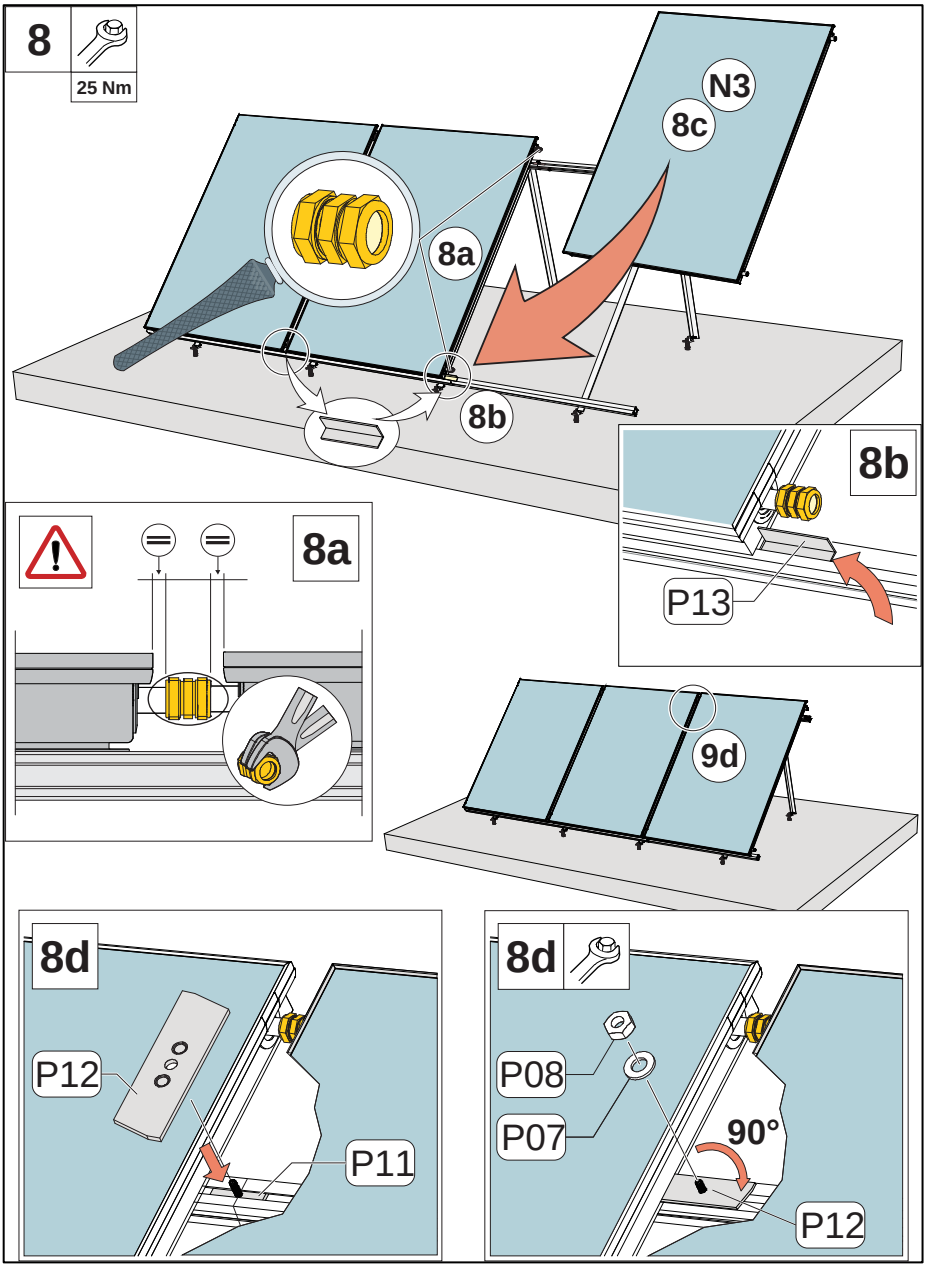

2
13
2a
2b
2c
25 Nm
2a
P29
P07
P08
P26
P27
2c
2b

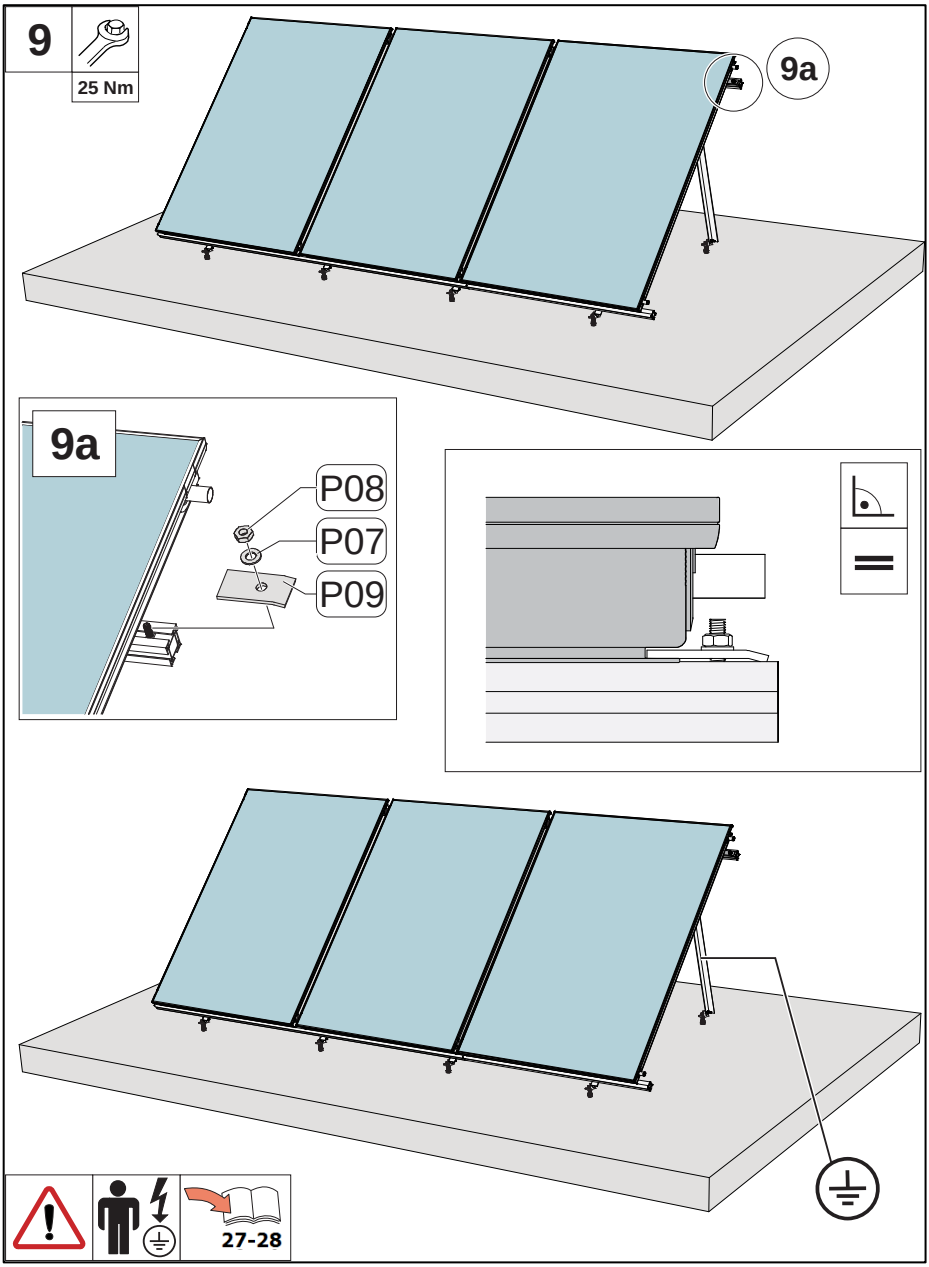

3
3b
3b
3a
3a
90
P04
P05
P10
P07
P26
P08
P27


4
25 Nm
4b
P07
P08
P11
P06
4a
4b
4a
4d
4c
4e


5
25 Nm
6
13-14
Note: During the installation the absorber should not be moved and the stop ends should be even on both sides
6a
48
6b
N1
6c
6a
6d
6b
P07
P08
P09
6d
P13
6c
N1
P03


7
25 Nm
7a
N2
7b
7c
Note: Ensure middle clamp parts are inserted before the next collector is fitted using the
7a
7b
8b*
7c
P08
P07
90°
P12
7b*
90°


8
25 Nm
N3
8c
8a
8b
8b
P13
8a
9d
8d
P12
P11
8d
P08
P07
90°
P12


9
25 Nm
9a
9a
P08
P07
P09
27-28

Pipe diameters

Dimensions table with a specific flow rate of 30 l/(m²h).

Collector panel size [m²]	2 - 8 m²
Pipe diameter / copper [mm]	min 15mm
Pipe diameter / stainless steel corrugated pipe	DN16

Mass flow rate

To ensure the performance of the collector, a specific flow rate of 30 l/ (m²h) is to be selected up to a collector panel size of 8m².

Pressure loss

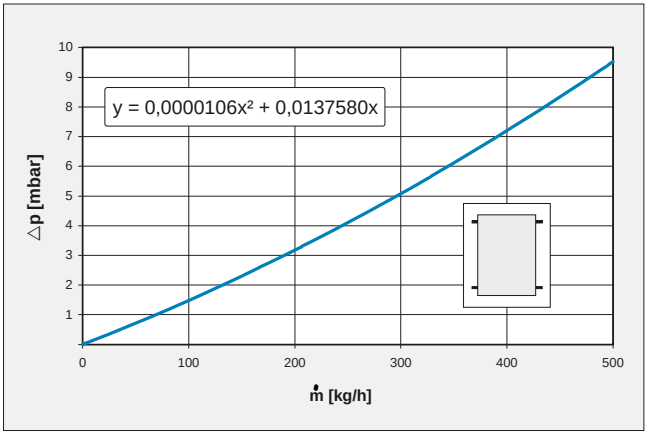


Figure 9: Pressure loss collector for anti-freeze / water mixture (40% / 60%) at a thermal conducting temperature of 50° C.

7 Operation

Although there are no operational components in the on roof kit, the fixings should be double checked prior to commissioning of the system.

Please refer to the On Site Guide for guidance on how to commission and operate the solar system.

Operating tips

7.1 Flushing and filling

For safety reasons, charging is to be carried out only when there is no direct sunlight or when the collectors are covered. The system must be filled with Dimplex SOLFH20 heat transfer medium. To protect materials from excessive thermal load, the system should be charged and commissioned as soon as possible, after 4 weeks at the latest. If this is not possible, the flange seals should be renewed before commissioning to prevent leaks.

It may not be possible to completely empty collectors once they have been filled. For this reason, collectors exposed to frost should only be filled with a water/antifreeze mixture, also for pressure and function tests. Alternatively, the pressure test can also be carried out using compressed air and leak detection spray.

7.2 Installing the temperature sensor

The temperature sensor should be installed in the sensor sleeve nearest to the collector array flow. All materials used for installing temperature sensors (sensor element, conducting compound, cables, sealing and insulating materials) must be suitably temperature resistant (up to 250° C).

7.3 Operating pressure

The maximum operating pressure of the collector is 10 bar. However, the system is secured at 6 bar at the pump unit. For the optimum operating pressure please refer to the Technical Manual.

7.4 Bleeding

The system must be bled:

- when commissioning the system (after filling the collectors)
- 4 weeks after commissioning
- when necessary, e.g. if there are malfunctions

Warning: Risk of scalding due to steam and hot heat transfer fluid!

Only operate the bleeding valve if the temperature of the heat transfer fluid is <60° C. When bleeding the system, the collectors must not be hot! Cover the collectors and, if possible, bleed the system in the morning.

7.5 Check heat transfer fluid

The heat transfer fluid must be checked with regard to its antifreeze and pH value. See On Site Guide for details.

8 Maintenance

Risk of scalding! Before carrying out any maintenance work on the system, ensure that it is safe to do so. The solar system must be decommissioned before work can be carried out.

Refer to the On Site Guide for a maintenance schedule of the complete system. However some basic checks can be made, for example, the collector array must be inspected visually, once a year, for any damage, leaks and contamination. Also ensure pipe insulation is intact and in good condition.

9 Decommissioning

Risk of scalding! Before carrying out any decommissioning work on the on roof kit, please ensure the solar system has been decommissioned.

If the product is being recycled, local waste disposal laws must be adhered to.